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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,695	03/09/2001	Toshiro Hayakawa	Q61191	3297

7590 06/04/2003  
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3202

EXAMINER

RODRIGUEZ, ARMANDO

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/801,695

Applicant(s)

HAYAKAWA ET AL.

Examiner

Armando Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-7, 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
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**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed March 27, 2003 pertaining to claim 8 have been fully considered but they are not persuasive. Applicant's argument on page 3 pertain to the fundamental transverse mode and further implies that fundamental transverse mode and single fundamental transverse mode are the same. Examiner does not agree with such an assumption because a fundamental transverse mode device requires specific structure, which will provide mode suppression and allow the device to operate in single transverse mode. The specifications of the invention including the claims do not disclose obtaining single mode operation.

Applicant's arguments with respect to claims 9-14 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

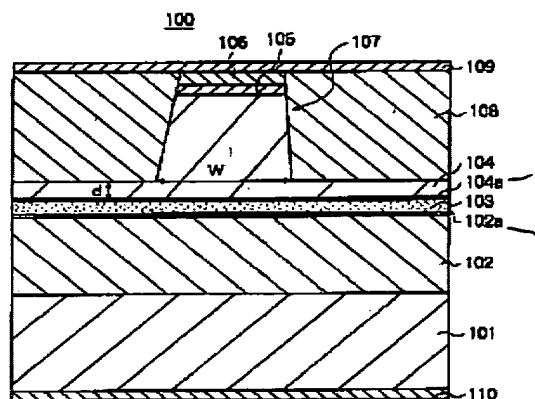
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Hirata (PN 6,195,375).

Figure 1 illustrates a semiconductor laser having lower and upper cladding layers (102), (104), an active layer (103), lower and upper guide layers (102a) and (104a)

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where the upper guide layer has a thickness smaller than the lower guide layer and a stripe width ( $W$ ) of  $0.4\text{ }\mu\text{m}$  or less, as described in the abstract and columns 6 and 7.

**FIG. 1**

Claims 9,10,13 and14 are rejected under 35 U.S.C. 102(e) as being anticipated by Fukunaga (PN 6,195,373).

Fukunaga discloses an index optical waveguide fundamental transverse mode semiconductor laser.

Regarding claim 9,

Figure 3A illustrates a transverse mode semiconductor laser having a cladding layer (2), a lower optical waveguide (3), an active layer (4) formed above the optical waveguide (3), an upper optical waveguide (7) composed of waveguides (5) and (6) formed above the active layer. Figure 3D illustrates the semiconductor laser provided with current blocking layer (20), which is above optical waveguide (5) and in physical contact with the optical waveguide. Column 6 lines 3-11, discloses the active layer may be a multiquantum well structure.

Regarding claim 10,

Column 5 lines 36-38, disclose the total thickness of the optical waveguides as having a range of 0.6  $\mu\text{m}$  to 1.6  $\mu\text{m}$ .

Regarding claim 13,

Figure 3D illustrates the semiconductor laser as stripe type device.

Regarding claim 14,

Column 5 lines 14-16, discloses the stripe (10a) of the semiconductor laser as having a width of 3  $\mu\text{m}$ .

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9,11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga (PN 6,195,373) in view of Asano et al (PN 6,285,695).

Figure 3A illustrates a transverse mode semiconductor laser having a cladding layer (2), a lower optical waveguide (3), an active layer (4) formed above the optical waveguide (3), an upper optical waveguide (7) composed of waveguides (5) and (6) formed above the active layer. Figure 3D illustrates the semiconductor laser provided with current blocking layer (20), which is above optical waveguide (5) and in physical contact with the optical waveguide. Column 6 lines 3-11, discloses the active layer may

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be a multiquantum well structure. Fukunaga discloses using Aluminum within the cladding layer and optical waveguide layers except within the active layer.

Fukunaga does not disclose the optical waveguides of the semiconductor laser being Aluminum-free.

Asano et al discloses a fundamental transverse mode semiconductor laser having Aluminum free optical waveguides.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the semiconductor laser of Fukunaga with Aluminum-free optical waveguides as disclosed by Asano et al because the semiconductor laser will operate in a fundamental transverse mode.

***Allowable Subject Matter***

Claims 2-7,15 and 16 are allowed.

The following is an examiner's statement of reasons for allowance:

After reviewing applicant's amendment and conducting an updated search examiner finds that none of the cited prior arts alone or in combination discloses the claimed semiconductor laser having the structural combination of independent claim 2 with a lower and upper cladding layer, a quantum well layer, a current confinement layer and a lower and upper waveguide layer, where the upper waveguide layer has a first thickness smaller than a second thickness of the lower waveguide layer and where the sum of the first and second thickness is 0.5  $\mu\text{m}$  or greater.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Armando Rodriguez whose telephone number is (703) 308-6218. The examiner can normally be reached on 10-hour day / M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-4881.

  
Armando Rodriguez  
Examiner  
Art Unit 2828

  
Paul Ip  
Supervisor  
Art Unit 2828

AR/PI  
June 1, 2003